20th Annual NDIA Test & Evaluation Conference & Exhibition

1:30 pm Wednesday 3 March, 2002

An Operational Test & Evaluation Design Strategy in Light of the JCIDS Transformation Guidance

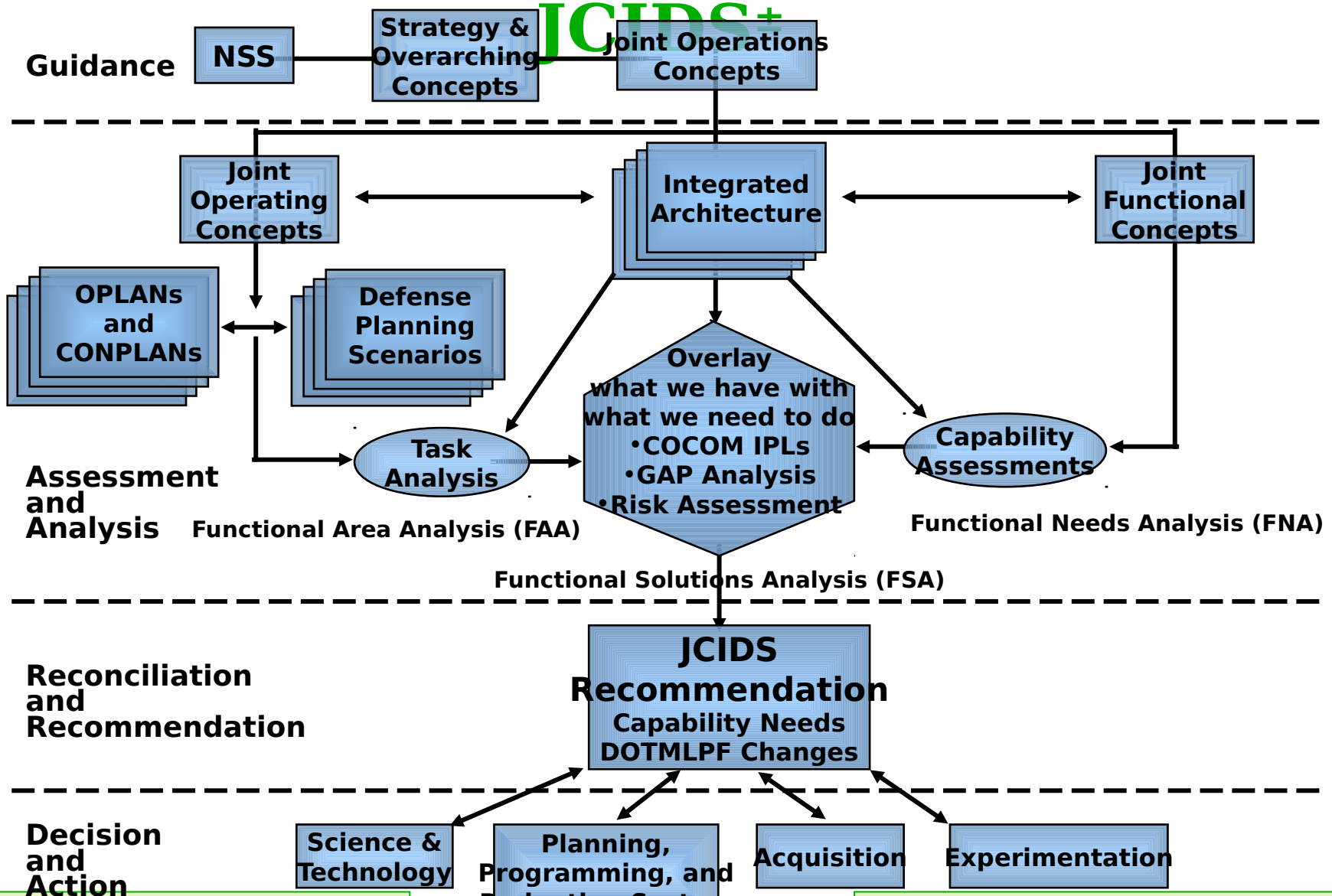
Held in Sparks, NV, March 1-4, 2004

Session Topic

An Operational Test & Evaluation Design Strategy in Light of the JCIDS Transformation Guidance

JCIDS: Joint Capabilities Integration and Development System

CJCSI 3170§ JCIDS±



§Chairman of the Joint Chiefs of Staff

±Joint Capabilities Integratio and Development System

Panel

- **RADM Charles “Bert” H. Johnston, Vice Commander, Naval Air Systems Command Headquarters, Patuxent River, MD**
- **Dr. Marion L. Williams, Chief Scientist, Headquarters Air Force Operational Test & Evaluation Center, Kirtland AFB, NM**
- **Mr. Jack H. Sheehan, Project Manager, Knowledge Integration in the C3I and Strategic Systems Directorate, Office of the Director, DoD Operational Test and Evaluation (DOT&E)**

Agenda

Introduction	5 Mins
Presentation by RADM Johnston	20 Mins
Presentation by Dr. Williams	20 Mins
Presentation by Mr. Sheehan	20 Mins
Q&A/Summary	Remaining Time

Biography for RADM Charles H. Johnston, Jr.

Education:

- BS – Engineering, Mississippi State
- MS – Aeronautical Systems, University of West Florida
- MS – Aeronautical Engineering (Avionics) Naval Post Graduate School

Experience:

- Deputy for Production and Systems Development, F/A-18 Program Office
- PM – Conventional Strike Weapons
- Assistant Commander for T&E, Naval Air Systems Command and Commander, Naval Air Weapons Center, Weapons Division, Patuxent River
- Serves as Vice Commander for the Naval Air Systems Command, Patuxent River

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Q&A/Summary	Remaining Time

Biography for Dr. Marion L. Williams

Education:

- BS – Aeronautical Engineering, Texas A&M, 1956
- MS – Mechanical Engineering, University of New Mexico, 1967
- Doctorate – Industrial Engineering and Management (Operations Research), Oklahoma State University, 1971

Experience:

- Principal Scientist, SHAPE Technical Centre, The Hague
- Chief Technical Advisor, AFTEC
- Chief Scientist/Technical Director, AFOTEC
- Principal Research Engineer, Georgia Institute of Technology
- Currently Chief Scientist, HQ AFOTEC

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Biography for Mr. Jack H. Sheehan

Education:

- BS − Nuclear & Electrical Engineering, Texas A&M
- MS − Electrical & Computer Engineering, University of Texas

Experience:

- 24 years in DoD RDT&E
- Naval Nuclear Propulsion Officer
- ASW Weapons Systems and Sensors
- Project Manager, Knowledge Integration, USD/AT&L Defense Modeling and Simulation Office (DMSO)
- Project Manager, Knowledge Integration in the C3I and Strategic Systems Directorate, Office of

JCIDS and Joint Force T&E

Mr. Jack H. Sheehan, Project Manager
Office of the Director, DoD Operational Test & Evaluation
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3 March 2004

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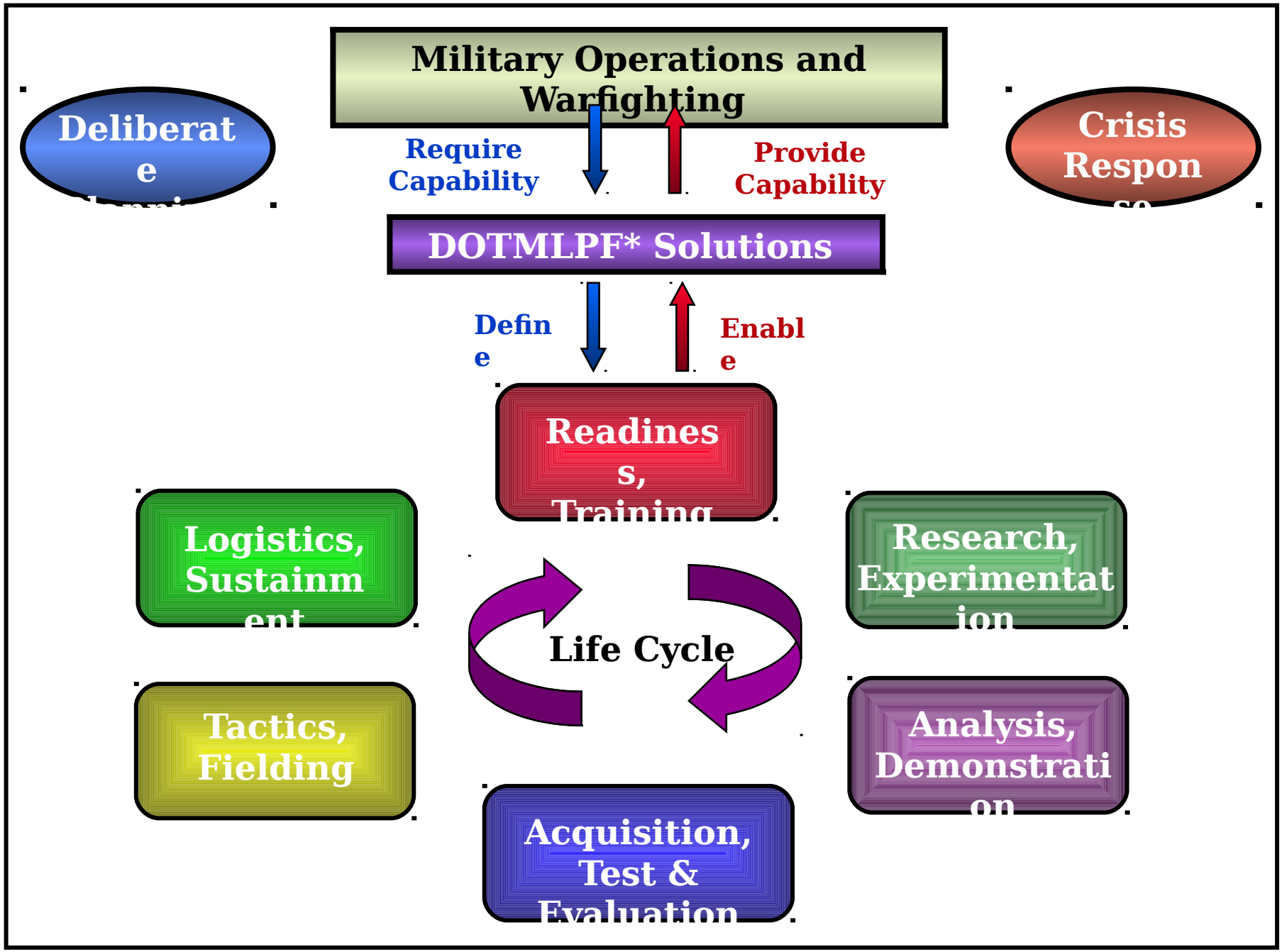
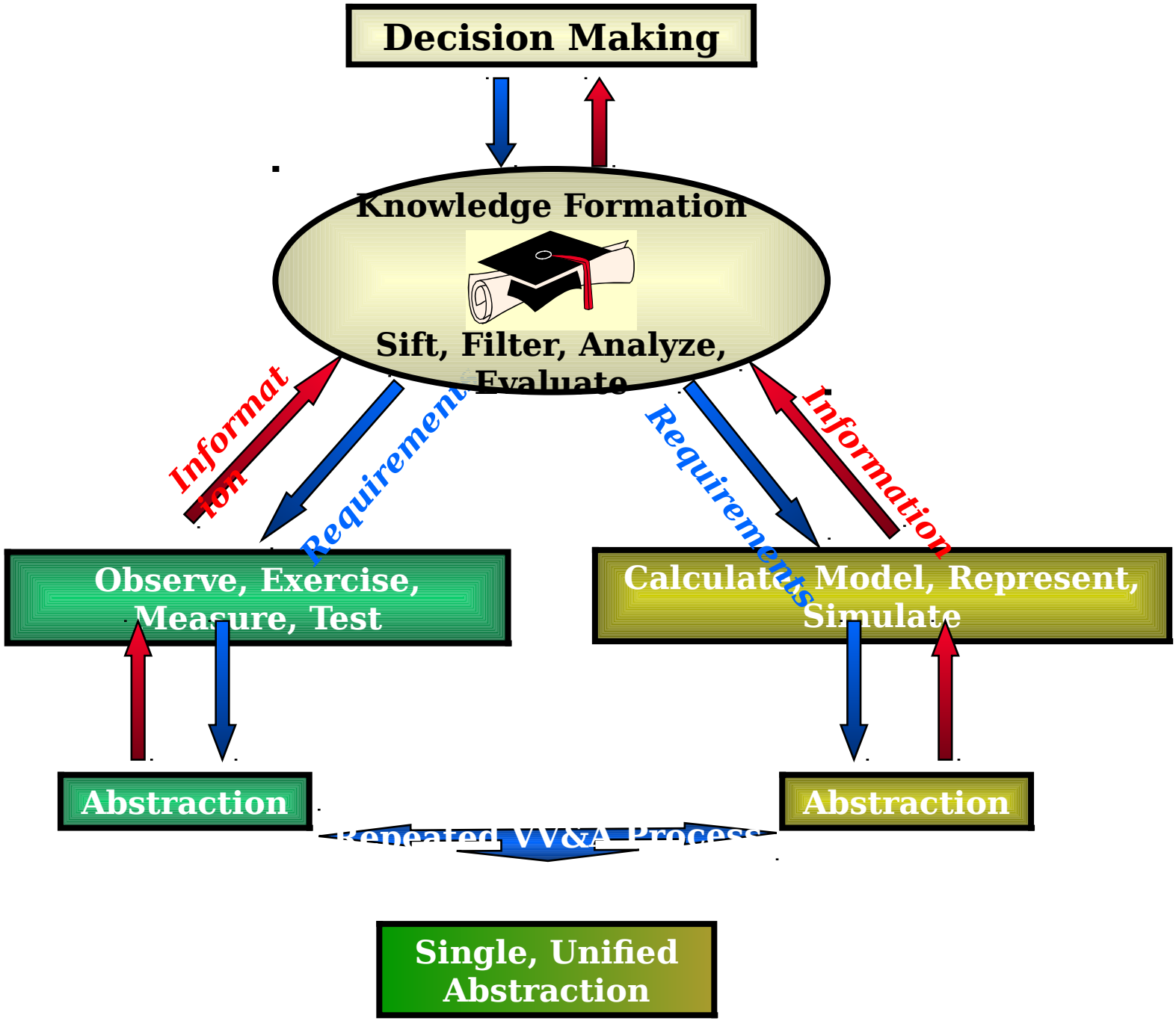


* DOTMLPF: Doctrine, Organization, Training, Materiel, Leadership, Personnel, Facilities


Decision Making
Knowledge Formation
Sift, Filter, Analyze, Evaluate
Information
Requirements
Requirements
Information
Observe, Exercise, Measure, Test
Calculate, Model, Represent, Simulate
Abstraction
Abstraction
Repeated V&V&A Process
Single, Unified Abstraction

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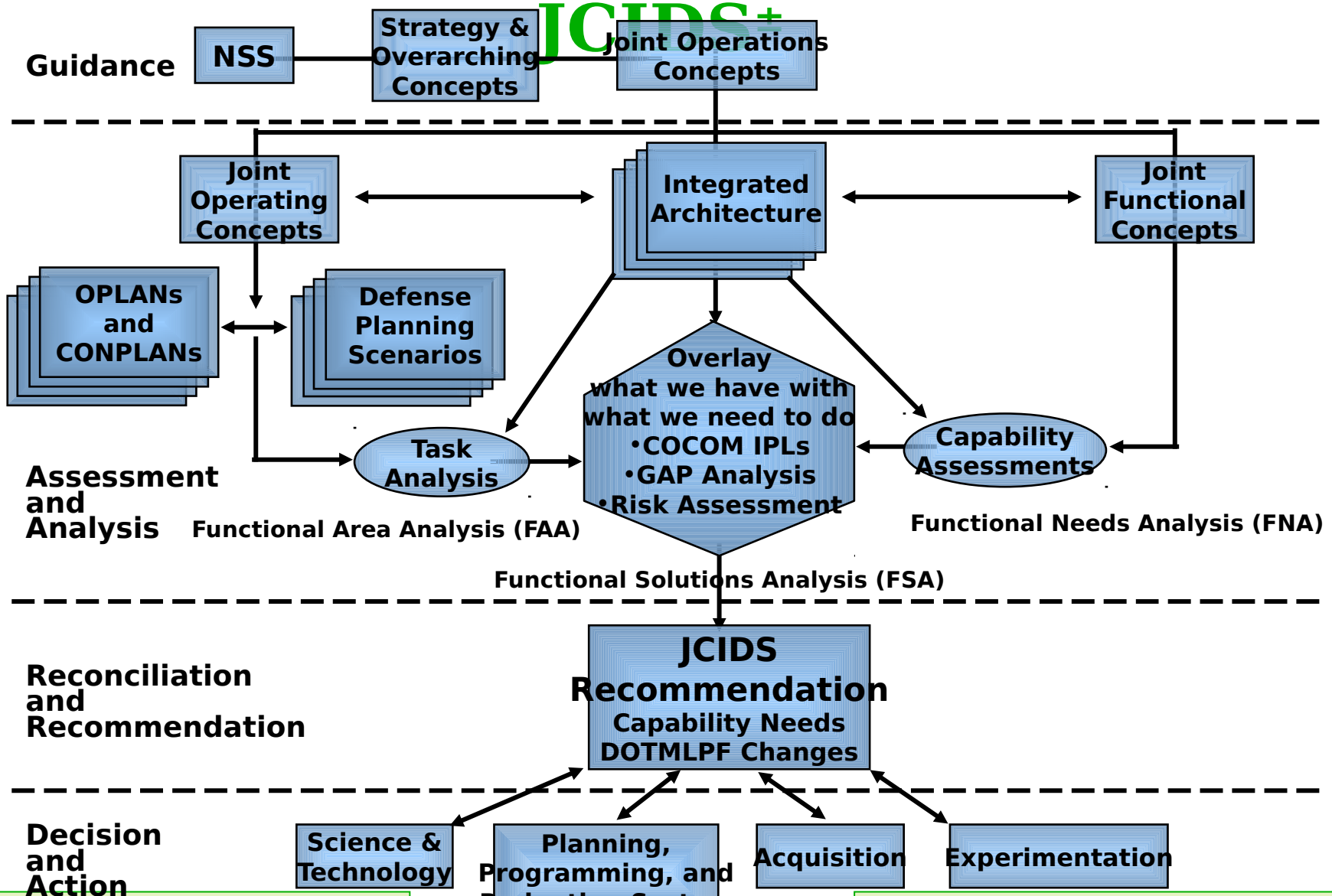

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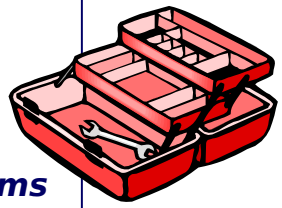
±Joint Capabilities Integratio and Development System

lissions & Means Framework implementation of JCIDS (Purdy/Donlin variant)

Top-Down decomposition provides the developer with a powerful tool to design the best DOTMPF system. It stems from user validated scenarios, missions and tasks --providing the framework for evaluating and demonstrating the required systems of systems capabilities



Missions

to accomplish

comprise

Tasks

to perform

enabled by

Capabilities

provides

as supplied by

System *

Answers the "So What?" Question

*** System is the integrated Doctrine, Organization, Training, Materiel, Leadership and Education, Personnel, Facilities (DOTMFPF) readiness**

MMF Application - Situation

Road to War

- **Radical elements form new government, seek to force recognition by UN as legitimate government.**
- **Legitimate, pro-Western Government of Orangeland is overthrown by radical elements and forced into exile.**
- **Majority of Orangeland's conventional military forces are loyal to new government. Orangeland invades neighboring country of Blueland.**
- **United States and its coalition partners believe national interests and regional stability are threatened. They take military action to drive Orangeland forces from Blueland; remove rebel government from power; restore legitimate, pro-Western government; stabilize region; and protect U.S. and coalition vital interests.**

Current Situation

- **Coalition forces have commenced offensive ground operations in the region to drive Orangeland forces out of Blueland and continue attacking to isolate rebel government leadership inside capital of Orangeland.**

Mission

- **CJTF intends to isolate rebel government leadership in the capital by defeating majority of conventional forces well outside the capital and preventing them from reinforcing security forces protecting the rebel leadership inside the capital.**

JOINT TASK FORCE (JTF)

JTF MISSION:
Conduct military operations in the JOA in order to set the conditions for restoring legitimate government by defeating Rebel forces, secure energy centers, and isolating Rebel government in the capital region of Orangeland.

KEY TASKS:
(1) Achieve air superiority
(2) Facilitate control of energy centers
(3) Isolate rebel government
(4) Destroy WMD Capability
(5) Defeat resisting Rebel forces

END STA … nment is restored

JTF ORGANIZATION

Ground (CJFLCC/JFMCC)	Air (JFACC/JFMCC)
1x UE (3x UA's, 3x SBCT, 1x PIR BN)	1 x MAW
1x Mechanized Division	2 x AEG
1x SBCT	2 x CAW
1x MEB	B-1B. B-2, B-52 Missions
1x AASLT BDE	
SOF/PSYOP/CAB (JPOTF/JSOTF)	**Sea (JFMCC)**
1 x SFG (-)	2 x CBG
1 x Ranger BN	
2 x SEAL Teams	
PSYOP/CAB	

OINT FORCES LAND COMPONENT COMMAND (JFLCC

JFLCC MISSION:
Conduct offensive operations in order to defeat Rebel forces in Orangeland, secure key energy production facilities and secure rebel government inside the capital of Orangeland.

KEY TASKS:

(1) Defeat the Rebel forces in zone

(2) Destroy WMD capability

(3) Secure key oil and gas pipelines and production facilities

(4) Surround capital region of Orangeland

(5) Secure rebel government leadership inside capital of Orangeland

END STATE: Rebel for… …ow of oil and gas is uninterrupted, cap… …el government inside, WMD threa…

JFLCC ORGANIZATION

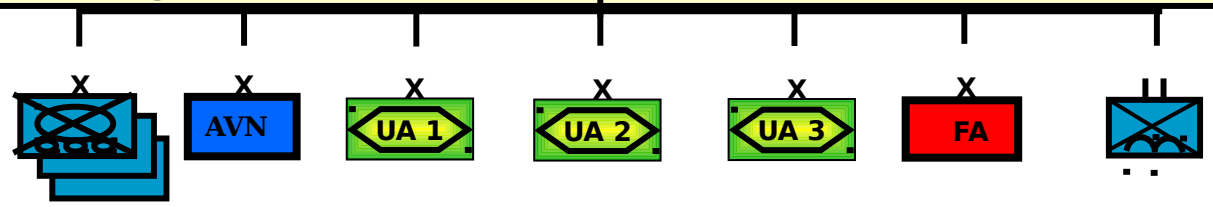
Ground (CJFLCC/JFMCC)
1x Mech Division
1x UE (3x UA's, 3x SBCT, 1x PIR BN)
1x SBCT
1x MEB
1x AASLT BDE

UNIT OF EMPLOYMENT

UE MISSION:
Attack to defeat Rebel forces in zone, surround the capital of Orangeland and isolate the rebel government inside the capital

INTENT:
PURPOSE: Set conditions for restoration of legitimate government in Orangeland
KEY TASKS:
(1) Conduct vertical maneuver in order to isolate enemy forces
(2) Conduct deliberate attack to Defeat Rebel forces in zone and prevent return to capital
(3) Secure key facilities with minimal collateral damage

END STATE: Rebel forces are [illegible]ted, UE has surrounded the capital, rebel government leadership and facilities are secured.



UNIT OF ACTION 1

(Increment 1, Threshold Design)

MISSION:

UA1 attacks in order to cause Rebel forces to fight in multiple directions and facilitate the attack to secure OBJ CAMEL

INTENT:

Purpose: Prevent Rebel forces from repositioning to Orangeland capital

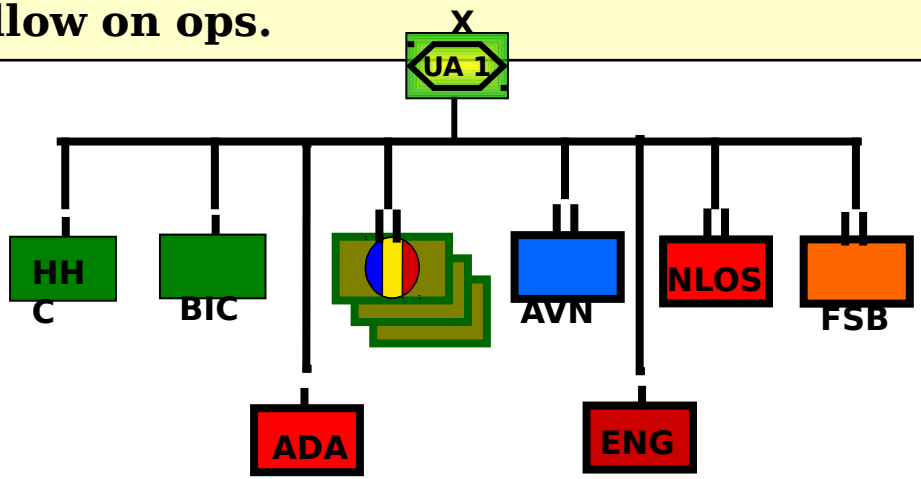
Key Tasks:

CAB1 Secure OBJ BLOCK in order to protect left flank of CAB2

CAB2 Secure OBJ CAMEL in order to enable UA2 seizure of OBJ BAT

CAB3 Secure OBJ KNIGHT in order to protect left flank of CAB2

End State: Rebel forces defeated and cut-off, CABs in position to conduct follow on ops.



COMBINED ARMS BATTALION 2

MISSION: **Attack to secure OBJ CAMEL. On order support UA2 attack on OBJ BAT.**

INTENT:

Purpose: Enable UA2 attack to seize OBJ BAT

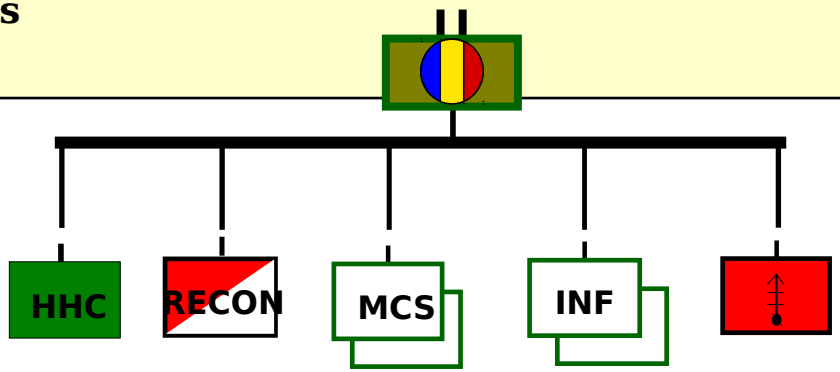
Key Tasks:

(1) Conduct Vertical maneuver to cause Rebel forces to fight in multiple directions

(2) Isolate & defeat Rebel forces vic OBJ CAMEL.

(3) Secure OBJ CAMEL in order to facilitate UA2 attack on OBJ BAT

End State: OBJ CAMEL secure, CAB2 prepared to conduct follow-on urban operations



TASKS

1. **Defeat enemy forces withdrawing to Capital**
2. **Seize bridge vic OBJ BISHOP**
3. **Conduct air assault with 1 dismounted INF CO**

CAB2

ART 8.5.1 Attack by Fire an Enemy Force or Position

TA 1
Deploy Conduct Maneuver

- **ART 2.2 Conduct Tactical Maneuver**
- **ART 2.4.2 Conduct Nonlethal direct fire against surface target**

TA 2
Develop Intel

- **ART 1.3 Conduct ISR**
- **ART 1.3.3.1 Conduct Zone Recon**
- **ART 1.3.4 Conduct Surveillance**

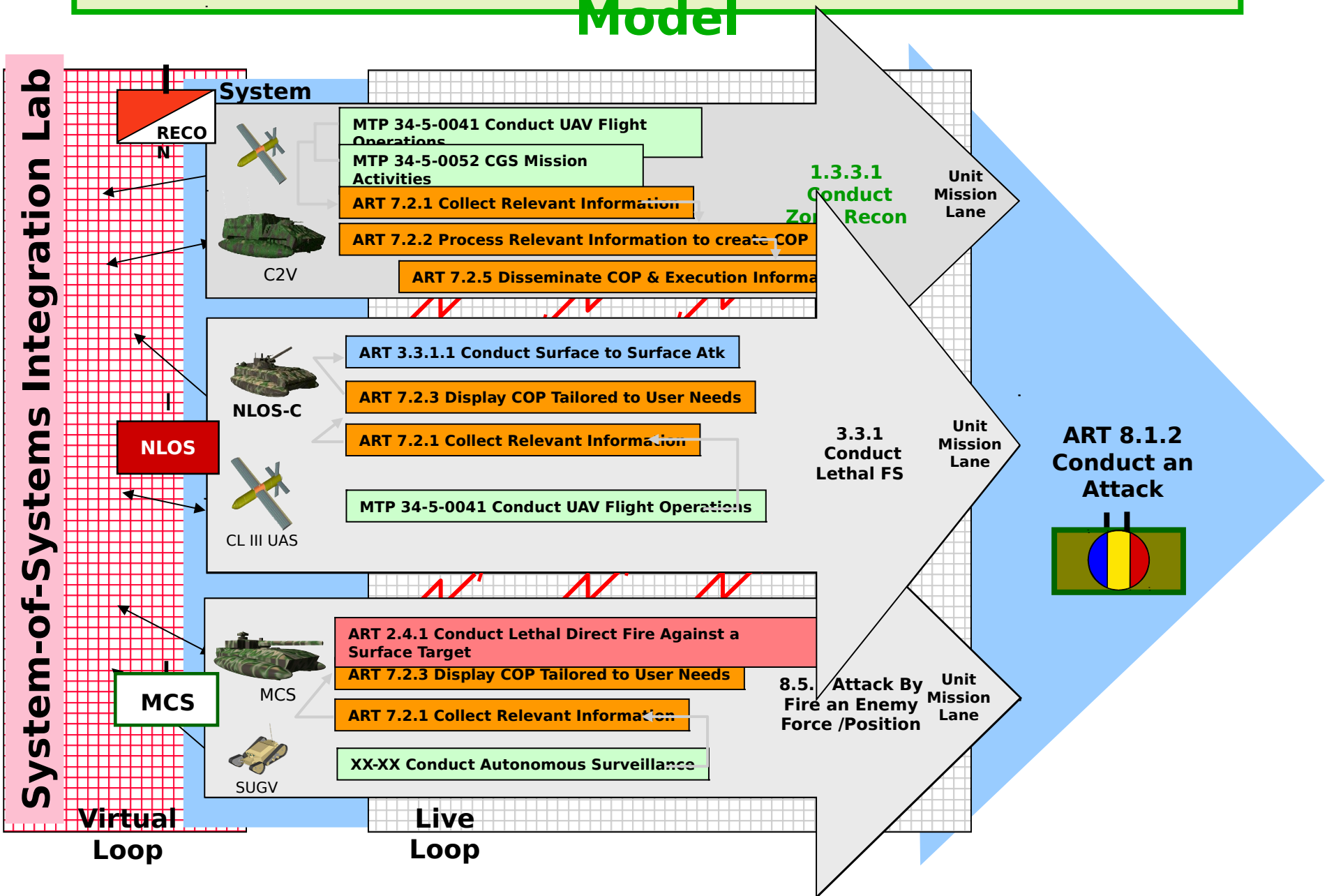
TA 3
Employ Firepower

- **ART 3.2 Detect and Locate Surface Targets**
- **ART 3.3.1.1 Conduct surface to surface attack**

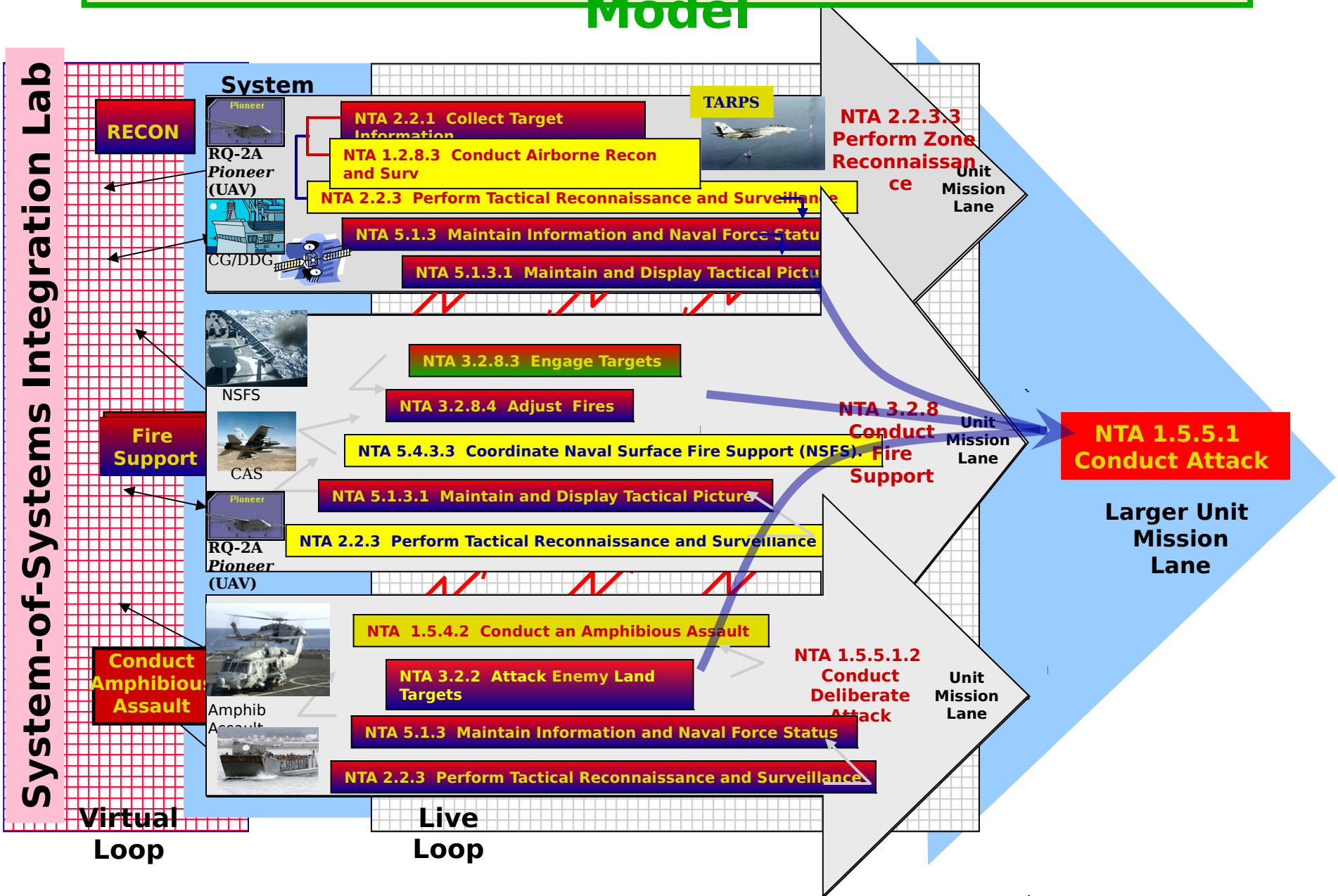
TA 5
Exercise C2

- **ART 7.2 Manage Tactical Information**
- **ART 7.2.2 Process Relevant Information to Create a COP**
- **ART 7.2.3 Display a COP Tailored to User Needs**

Sample Army Task Set Applied to OT Model


System-of-Systems Integration Lab
RECON
System
MTP 34-5-0041 Conduct UAV Flight Operations
MTP 34-5-0052 CGS Mission Activities
ART 7.2.1 Collect Relevant Information
ART 7.2.2 Process Relevant Information to create COP
ART 7.2.5 Disseminate COP & Execution Informa
C2V
1.3.3.1 Conduct Zo Recon
Unit Mission Lane
NLOS
NLOS-C
ART 3.3.1.1 Conduct Surface to Surface Atk
ART 7.2.3 Display COP Tailored to User Needs
ART 7.2.1 Collect Relevant Information
MTP 34-5-0041 Conduct UAV Flight Operations
CL III UAS
3.3.1 Conduct Lethal FS
Unit Mission Lane
ART 8.1.2 Conduct an Attack
MCS
ART 2.4.1 Conduct Lethal Direct Fire Against a Surface Target
ART 7.2.3 Display COP Tailored to User Needs
ART 7.2.1 Collect Relevant Information
MCS
8.5. Attack By Fire an Enemy Force /Position
Unit Mission Lane
XX-XX Conduct Autonomous Surveillance
SUGV
Virtual Loop
Live Loop

Sample Navy Task Set Applied to OT Model


System-of-Systems Integration Lab
System
RECON
RQ-2A Pioneer (UAV)
CG/DDG
NTA 2.2.1 Collect Target Information
NTA 1.2.8.3 Conduct Airborne Recon and Surv
NTA 2.2.3 Perform Tactical Reconnaissance and Surveillance
NTA 5.1.3 Maintain Information and Naval Force Statu
NTA 5.1.3.1 Maintain and Display Tactical Pictu
TARPS
NTA 2.2.3.3 Perform Zone Reconnaissance
Unit Mission Lane
NSFS
Fire Support
CAS
NTA 3.2.8.3 Engage Targets
NTA 3.2.8.4 Adjust Fires
NTA 5.4.3.3 Coordinate Naval Surface Fire Support (NSFS)
NTA 5.1.3.1 Maintain and Display Tactical Picture
NTA 2.2.3 Perform Tactical Reconnaissance and Surveillance
NTA 3.2.8 Conduct Fire Support
Unit Mission Lane
RQ-2A Pioneer (UAV)
Conduct Amphibious Assault
Amphib Assault
NTA 1.5.4.2 Conduct an Amphibious Assault
NTA 3.2.2 Attack Enemy Land Targets
NTA 5.1.3 Maintain Information and Naval Force Status
NTA 2.2.3 Perform Tactical Reconnaissance and Surveillance
NTA 1.5.5.1.2 Conduct Deliberate Attack
Unit Mission Lane
NTA 1.5.5.1 Conduct Attack
Larger Unit Mission Lane
Virtual Loop
Live Loop

MMF Application – Key Tasks

JTF

1. Restore legitimate government
2. Achieve air superiority
3. Destroy WMD capability
4. Facilitate control of energy centers

Operational to Tactical: Nested Tasks

JFLCC

1. Secure capital region in Orangeland
2. Secure key oil and gas pipelines and prod facilities
3. Defeat rebel forces

UE

1. Attack to defeat rebel forces in zone
2. Conduct vertical maneuver to disrupt rebel forces
3. Secure key facilities

UA1

1. Secure key terrain vic OBJ CAMEL
2. Block enemy reinforcements from reaching capital

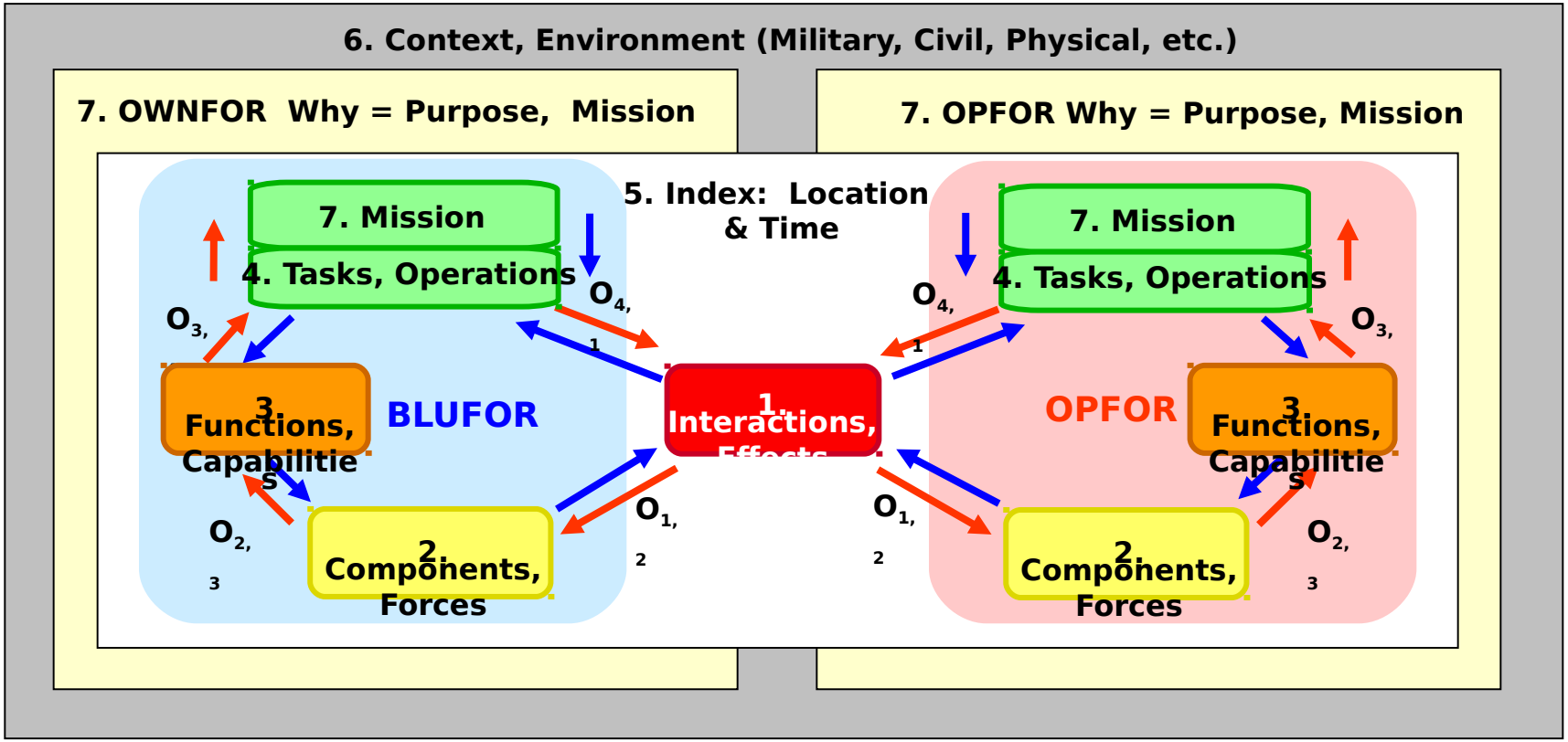
CAB2

1. Secure OBJ CAMEL in order to facilitate UA2 attack on OBJ BAT
2. Attack to defeat rebel forces attempting to return to capital

Missions and Means Framework

11 Fundamental Elemen

Seven Levels, Four Operators

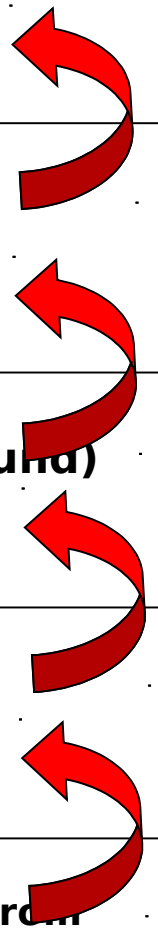


Planning

Employment

Relating Effects to Utility

JTF Commander Strategic/Operational	**Establish conditions for restoration of legitimate Pro-Western Government**
JFLCC Operational	**Isolate capital**
UE Operational/Tactical	**Secure Objectives vicinity of capital (Surround) Defeat conventional opposing forces**
UA Tactical	**Prevent rebel forces from returning to the capital**
CAB Tactical	**Seize OBJ Camel in order to prevent rebel forces from crossing bridge**



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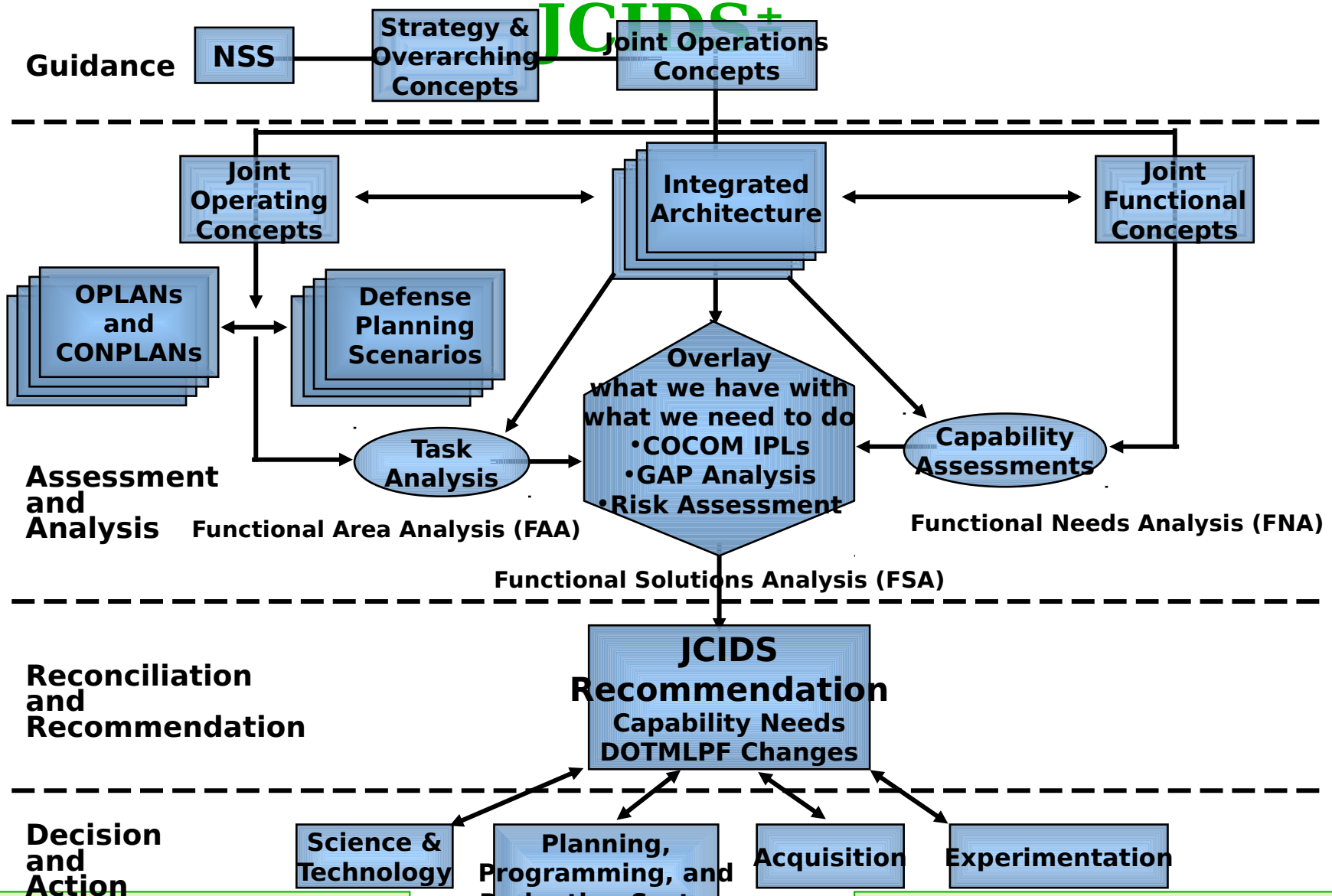

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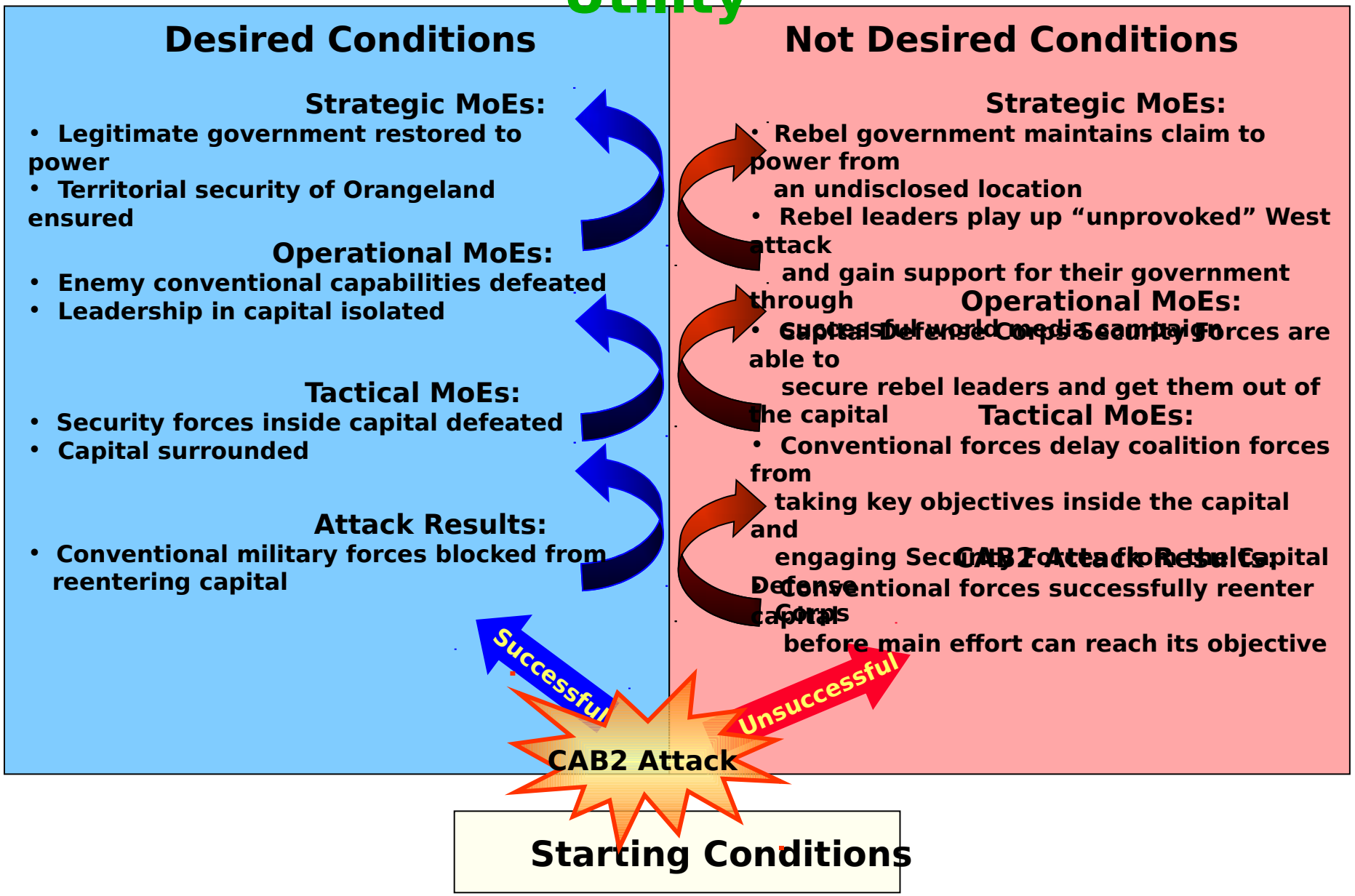
Relating Effects to Utility


Desired Conditions
Strategic MoEs:
• Legitimate government restored to power
• Territorial security of Orangeland ensured
Operational MoEs:
• Enemy conventional capabilities defeated
• Leadership in capital isolated
Tactical MoEs:
• Security forces inside capital defeated
• Capital surrounded
Attack Results:
• Conventional military forces blocked from reentering capital
Not Desired Conditions
Strategic MoEs:
• Rebel government maintains claim to power from an undisclosed location
• Rebel leaders play up “unprovoked” West attack and gain support for their government through successful world media campaign
Operational MoEs:
• Capital Defense Corps security forces are able to secure rebel leaders and get them out of the capital
Tactical MoEs:
• Conventional forces delay coalition forces from taking key objectives inside the capital and engaging Security Forces to Retain Capital Defense Corps
CAB2 Attack Results:
• Conventional forces successfully reenter capital before main effort can reach its objective
Successful
Unsuccessful
CAB2 Attack
Starting Conditions